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Internal-external control, power position, and position satisfaction in task-oriented groups.

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INTERNAL-EXTERNAL CONTROL, POWER POSITION, AND POSITION SATISFACTION IN TASK-ORIENTED GROUPS

by

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ABSTRACT

On the basis of a conceptualized congruency between the expected locus of control and the preferred locus of control, it was hypothesized that the personality variable of internal-external control would interact with power position in determining: (1) subjects' satisfaction with their position; and (2) subjects' satisfaction with the person assigning them to their power position. These hypotheses were tested via an experimental design in which subjects were led to believe that they possessed either high or low power in a triadic communication network, whose goal was to complete a group task with maximum efficiency. Fifty-two subjects of both sexes were selected for experimental sessions on the basis of highly internal or highly external scores on a Personal Control factor, which had emerged from a prior factor analysis of Rotter's I-E Scale. Subjects' responses to a post-experimental questionnaire provided support for both hypotheses for males, but not for females. These results are interpreted as supporting the hypothesized relation between the expected and preferred loci of control, and the validity of the personal control construct. Interpretations are offered for the sex differences obtained, and the theoretical and practical implications of the results are discussed.

PREFACE

The author wishes to express his particular gratitude to Dr. H. Minton, the Chairman of his thesis committee, for his valuable advice and comments in all phases of this study. He is also indebted to the other members of his thesis committee, Drs. A. Kubota, J. La Gaipa, and F. Schneider, for their helpful comments, and to Dr. G. Namikas, for providing the practical facilities for the study. Finally, thanks are due to Dana Dean, Frits Lindeyer, and Pacey Sugar, who assisted during experimental sessions as confederates, and to all the students who contributed their time during a very busy stage of the academic year to serve as subjects.

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CHAPTER I

INTRODUCTION

The general aim of this study is to examine the relative effects of personality and situational variables in determining behaviour. The personality variable of special concern refers to an individual's predominant beliefs regarding his ability to control his own outcomes. The situational variable is the amount of social power actually possessed by an individual in a group situation, and the dependent variable is the satisfaction of individuals with their power position.

The personality construct of internal-external control has been used to operationalize one's beliefs regarding the locus of control of outcomes. The literature relating to internal-external control, satisfaction, and social power, will be reviewed in the following sections.

Internal-External Control

The concept of internal-external control is derived from the social learning theory of Rotter (1954; 1966). This theory conceptualizes behaviour to be a function of the expectancy and value of reinforcement. The internal-external control construct refers to an individual's perception of whether the occurrence of a reinforcement " ...follows from or is contingent upon his behaviour

or attributes versus the degree to which he feels the reward is controlled by forces outside of himself, and may occur independently of his own actions (Rotter, 1966, p. 1)."

In the process of social learning in a variety of situations, the individual will progressively develop generalized expectancies regarding the locus of control of reinforcement. Internal control describes the belief or generalized expectancy that life's outcomes are predominantly the result of one's own actions, while external control refers to the prevailing belief that one's outcomes are mainly determined by external forces such as chance, fate, or more powerful others. Internal-external control therefore, is conceived as a continuum on which an individual may be placed; that is, it reflects a personality dimension. The Internal-External Control (I-E) Scale (Rotter, 1966) is the most commonly used measure of this construct. This scale is a forced-choice questionnaire consisting of alternative expectancy statements, one characteristic of a belief in internal locus of control and the other of a belief in external locus of control.

In Rotter's theory, expectancies regarding the locus of control of behaviour-reinforcement contingencies are considered to be both situation-specific and generalized. An individual's generalized expectancies are postulated to exert an important influence on his behaviour, under a variety of different stimulusconditions. This influence is likely to be particularly strong in novel situations

which lack prior situation-specific expectancies, or in ambiguous situations in which no immediately appropriate specific expectancy can be engaged.

The conceptualized relationships between internal-external control and a number of behavioural criteria have received extensive empirical validation. Reviews of this work are provided by Lefcourt (1966), Rotter (1966), and Minton (1971a). The behavioural dimensions which have been shown to be related to the internal-external control construct include four major categories: (1) performance in controlled laboratory tasks; (2) attempts to control the environment; (3) performance in achievement situations; and (4) reactions to social influence. Thus in comparison to externally controlled individuals, individuals characterized as internally controlled have tended to be: (1) more efficient and more motivated in tasks involving skill rather than chance; (2) more alert to their surroundings and more active in attempting to improve environmental conditions; (3) more involved and persistent in achievement tasks; and (4) more resistant to attempts at influence.

Internal-External Control and Satisfaction

An area of research with the internal-external control construct, especially relevant to the purpose of this study, is the relationship between locus of control and task satisfaction. Several studies have demonstrated that the expected locus of control may also be the preferred

locus of control. These studies have hypothesized that individuals will prefer those situations which they believe will lead to a maximization of outcomes. Thus, externally controlled individuals, believing their reinforcements to be outside their control, would prefer situations in which their outcomes were in fact controlled by others. Internally controlled individuals on the other hand, believing their reinforcements to be in their own hands, would prefer situations in which they could be self-controlling.

The results of studies by Cromwell, Rosenthal, Shakow, and Zahn (1961) and by Rotter and Mulry (1965) provided support for this postulated relation between the expected locus of control and the preferred locus of control. In the former study, schizophrenic subjects, who were significantly more externally controlled than normal subjects, preferred conditions of external control and performed better under them, than did normal, internally controlled subjects. The study by Rotter and Mulry showed that internally controlled subjects valued skill-determined rewards more than chance-determined rewards, while externally controlled subjects placed more value on chance-determined rewards; that is, externally controlled subjects seemed to prefer rewards which derived from external sources, while internally controlled subjects preferred rewards obtained through their own efforts.

On the basis of their logical analysis in terms

of preference for situations which maximized outcomes and the findings of these two studies, Watson and Baumal (1967) predicted that in a situation in which expected locus of control and actual locus of control were incongruent, subjects would experience dissatisfaction and anxiety. These negative emotional reactions would result in performance which was inferior to that obtained in a congruent situation. They obtained support for this view in a study in which subjects were led to believe that the efficient learning of nonsense syllables would either be instrumental in the avoidance of later shocks, or largely irrelevant in avoiding these shocks. As predicted, internally controlled individuals made more errors when they anticipated that they would have no control over their later situation, while externally controlled individuals made more errors when they anticipated that they would have control over their later situation. The authors concluded that these findings lent strong support to their hypothesis concerning the congruency of the expected locus of control with the preferred locus of control. Further supporting evidence was reported by Schneider (1968), who obtained a very correlation between internal-external control and a forced-choice "Activity Preference Scale" composed of pairs of skill and chance activities. Internally controlled individuals preferred activities which were dependent mainly on skill, while externally controlled individuals preferred activities which were mediated mainly by chance factors. Julian,

Lichtman, and Ryckman (1968) obtained evidence which corroborated internally controlled individual's preference for circumstances in which they could exert control over their outcomes. In a dart-throwing task, they preferred to throw from a shorter rather than a longer distance, even though probabilities of success at the two distances were equalized by the number of throws allowed.

Further conceptual support for a positive relation between the expected and preferred loci of control can be obtained from the work of some personality theorists. Several of them have hypothesized that unpleasantness is associated with the incongruence of actual and expected events and incorporated this as a major assumption of their theoretical positions. Thus Kelly (1955) conceived of prediction and control as the main aims of life, resulting in the formation of systems of constructs defined by expectancies, with disconfirmation of expectancies leading to anxiety. Festinger (1958) engendered considerable research interest with his theory of "cognitive dissonance", which regarded the disconfirmation of expectancies as an unpleasant occurrence leading to a state of "dissonance".

The evidence which has been discussed suggests that there may be a positive relation between the expected and preferred loci of control, which will mediate affective reactions in situations involving control. When a person is able to exert control over the outcomes of another, he may be considered to possess power over this other

person. Therefore, it appears that the internal-external control construct may be of relevance to the analysis of affective reactions to interpersonal control or power relations. The literature relating internal-external control to areas in the study of power will be reviewed in the following section.

Internal-External Control and Power

The concept of internal-external control has been widely applied to the study of minority groups, particularly blacks in the United States (Forward & Williams, 1970; Gurin, Gurin, Lao, & Beattie, 1969). In this area of reasearch, internal-external control is regarded as a useful measure of the individual's sense of power. Members of disadvantaged groups tend to hold the predominant belief that major events in their lives are outside their control, that is, they are externally controlled in terms of the personality dimension of internal-external control (Gurin & Gurin, 1970). This sense of powerlessness was one of the criteria used by Seeman (1959) to define his concept of "alienation"-- a concept which has achieved extensive usage in recent years as a basis for attempted explanations of the disenchantment reactions of industrial workers, students, and minority racial groups. Clark (1965) has pointed out that power is an ever-present entity, pervading all aspects of human life. He emphasized the need to expand the scientific knowledge of power, in order to achieve the eventual understanding and control

of the mechanics of social, economic, and political change. In its context as a prime determinant of reality and changes in reality, Clark suggests that power might profitably be regarded as the major unifying concept for the social sciences in general.

Minton (1971a) has developed a psychological analysis of power in which he conceives of power as relevant both to a given situation (social power) and as a relatively consistent attribute of an individual across situations (personal power). In this latter sense, therefore, power may be regarded as a personality variable, with individuals varying along a given dimension of power, such as one's beliefs about personal power or one's ability to successfully exercise power. Minton uses the term, "subjective power", to refer to the individual's evaluation of his ability to produce intended effects. Within this conceptual scheme, Minton regards internal-external control as an operationally useful representation of individual differences along the dimension of subjective power, that is the individual's personal beliefs concerning his ability to implement his intentions. An individual's position on the personality dimension of subjective power determines the generalized expectancies he will tend to bring to a given situation, concerning the actual social power he will possess.

Social Power and Satisfaction

Social power may be defined as the relative power among persons interacting with one another in a given

situation. One type of situation that lends itself to the study of social power is a communication network, because it allows systematic variation of relative access to communication channels and to information. Typically a communication network isolates group members from one another and restricts their method and channels of communication to those prescribed by the experimenter, such as written messages passed through slots in vertical partitions, or verbal communication through an intercom system, etc. The channels of communication are under the control of the experimenter and can be manipulated to form any desired pattern. The amount of information available to each group member, relating to the group task in hand, is similarly under experimental control. Therefore it is possible to systematically vary the relative social power of group members by appropriate manipulation of relative access to communication channels and to task-relevant information. Those group members who have greater access to communication channels or information possess greater ability to control the outcomes of the group, and can therefore be considered to wield greater social power. However, an individual possesses power over another only to the extent that he can control the other's reinforcements (Shaw, 1971). Therefore, social power differentials can operate within a group, only if successful performance of the group task has reinforcing properties for group members--that is, group members must be sufficiently motivated to attain

the relevant outcomes, to become ego-involved in the group task.

Central positions in communication networks afford their occupants greater access to communication channels than do peripheral positions. Therefore, individuals in central positions possess more social power than those in peripheral positions. Furthermore, greater satisfaction is shown by members of decentralized communication nets, than centralized communication nets. A centralized communication net is characterized by a hierarchical pattern of communication, in which one or more group members have superior access to communication channels, whereas a decentralized communication net involves an equalitarian pattern of communication, with relative equality of access to communication channels (Fig. 1).

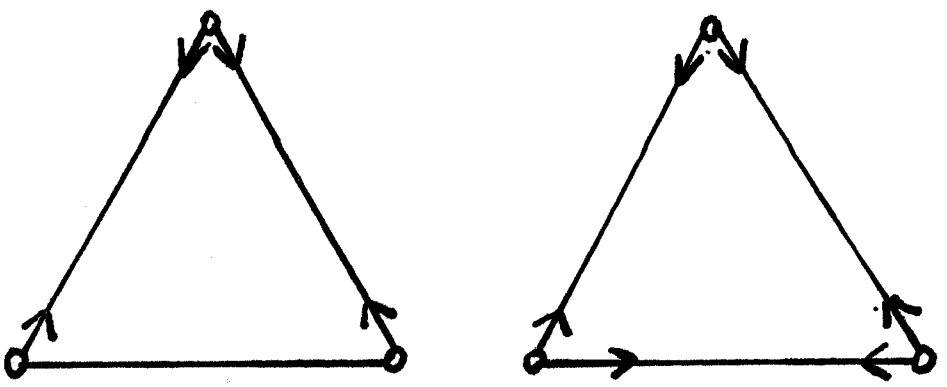


Fig. 1 Triadic Centralized Communication Net — Triadic Decentralized Communication Net

Generally then, individual's satisfaction in communication nets appears to be associated with the possession of social power, empirically defined by centrality of

position. Leavitt (1951) considered that independence of action, through access to information, was the primary determinant of satisfaction in communication nets, and therefore mediated the relation between satisfaction and centrality, or social power. Leavitt's concept of independence was subsequently expanded by Shaw (1964) to refer to the total degree of freedom with which an individual could function in the group. Thus, Shaw's concept of independence includes other situational and personal factors apart from simply accessibility of information, and is considered to determine both group efficiency and member satisfaction in the communication network.

Mulder (1960) has reported a study which casts some light on the motivational aspects of satisfaction in communication networks. He found that "self-realization", operationally defined in terms of the ability to complete one's own task by oneself, did not affect satisfaction, even though there was a clear difference in the availability of information between the low and high "self-realization" conditions. The major variable in determining satisfaction seemed to be the exercise of power, in the sense of determining the behaviour of others. Although their own outcomes were controlled by the more powerful group leader, "high power" subjects were able in turn to control the outcomes of two less powerful group members. These subjects were more satisfied than "low power" subjects, who had no control over the outcomes of others. Mulder concluded that

the exercise of power per se appeared in general, to be the major determinant of satisfaction in communication networks.

Watson and Bromberg (1965) manipulated power position in a communication network by instructing subjects assigned to high power positions to issue commands and make the final decisions concerning solutions to tasks, while low power subjects were instructed to obey these commands. All messages were intercepted and prepared messages substituted, in order to assure greater control of possible confounding variables, such as frequency of message reception, and amount of information reception. The authors reported that in this strictly solution-oriented situation ,the occupants of high power positions were more satisfied than the occupants of low power positions. The results of this study support Mulder's (1960) view that the exercise of power per se is a major motivational variable underlying satisfaction.

Much of the research with communication networks however, has tended to neglect the possibility of an interaction between the personalities of individual group members, and their position in the communication network, in the determination of subsequent behaviour. This represents a failure to take adequate account of the fact that behaviour is a function of both personality and situational variables. For example, Hunt (1965) has emphasized that variations in behaviour are neither the result solely of individual

differences among subjects, nor of variations in situations, but rather the result of their interactions. Block (1968) suggested that failures to take into account environmental factors may be one of the major reasons for the inconsistent findings in the literature, concerning relationships between personality and behaviour. Shaw (1971) stressed the importance of taking into consideration the personality characteristics of group members in the analysis of group processes:

> The characteristics of individuals who compose the group thus constitute a personal environment in which the group must operate. One cannot hope to fully understand group process without knowing the ways in which this personal environment influences group behaviour (Shaw, 1971, p. 155).

Hare (1962) in his review of small group studies, also conceived of behaviour as "... a compromise between the tendencies of personality and role expectations" (Hare, 1962, p. 276), but found only two studies in the literature which had investigated the interaction between personality and position in a communication network. There have been few studies of this type since, though Zander and Forward (1968), and Schneider and Delaney (In press) have recently reported studies which do fall into this category. In the former study, the personality variables of need for achievement and test anxiety were found to interact with position in a communication network, in determining group members' desire for success in the group task. The latter study showed that the need for achievement of subjects in peripheral positions interacted

with problem complexity in determining the speed of solution of group problems.

One of the studies cited by Hare (Berkowitz, 1956) examined the relation between the personality trait of ascendance and behaviour in central and peripheral positions in a communication network. Degree of ascendance appeared to have no effect on satisfaction, with both low and high ascendants showing no difference in satisfaction between central and peripheral positions. Personality did appear to mediate initial differences in performance, but over time, these differences became minimal. Berkowitz interpreted these results as supporting his theoretical analysis of the interaction between personality and situation. In his view, personality structure determined the position of a response in the individual's response hierarchy. Initially, responses from the upper levels of this hierarchy would be favoured, regardless of situational factors. However, as time passed, there would be a process of adaptation to the specific situation, and other lower level responses could be called upon (assuming they were present in the hierarchy) as dictated by the requirements of the role or situation. In a given situation then, initial personality-mediated behavioural differences between group members would gradually decrease, leading to relatively uniform behaviour.

The other study cited by Hare (Trow, 1957) showed that individual differences could cause significant variations

in reactions to position in a communication net. Task-oriented groups communicated by passing written messages, which in fact were intercepted and replaced by prewritten messages designed to create the illusion of either centrality or peripherality, and autonomy or dependence. Centrality-peripherality was defined in terms of access to communication channels and autonomy-dependence in terms of access to task-relevant information. Thus in the autonomous condition, subjects were supplied with all the information required for the performance of the task, and therefore were able to direct their activities themselves, while in the dependent condition, they lacked essential task-relevant information. In the latter condition therefore, at various stages in the performance of the task, subjects required direction from a possessor of this crucial information.

No relation was found between centrality-peripherality and satisfaction, but degree of autonomy was related to satisfaction. Subjects were more satisfied in the autonomous than in the dependent condition, the extent of this relation being mediated by subjects' need for autonomy as defined by responses to a pre-experimental questionnaire. Thus, subjects categorized as having a high need for autonomy were more satisfied in the autonomous than in the dependent condition, while subjects with a low need for autonomy showed no difference in satisfaction under the two conditions. Therefore, Trow concluded that the relation between autonomy and satisfaction was due to the operation of a need for

autonomy, the strength of the relation varying directly as the strength of the need. This relation, he suggested, might explain the generally observed relationship between centrality and satisfaction, since central positions in communication nets are usually characterized by relatively high degrees of autonomy.

However, in view of Mulder's (1960) later work, Trow's interpretation of his findings must be questioned. Mulder pointed out that Trow's "autonomy" condition might have included more than simply the self-sufficiency factor attributed to it by Trow. Since the possession of autonomy by an individual group member enabled him to increase the efficiency of the whole group, elements of social power may also have been engaged. Thus, Trow's autonomy condition might more correctly be termed a "high power" condition. This interpretation of Trow's results would make them compatible with the findings of Mulder, with respect to the relation between satisfaction and the exercise of power.

Research in other areas of power relations has also pointed to the importance of taking account of personality characteristics. For example, in the laboratory setting, Smelser (1961) found that the most effective performance of a task resulted when the personality structure of the subordinate (his score on the dominance-submission dimension of the California Personality Inventory) and his social role (leader or follower) were congruent. In a series of

studies conducted in industrial settings, Vroom (1959; 1960) showed that the opportunity to participate in decision making generally had a positive effect on both attitudes and job performance. That is, the possession of some measure of social power tended to have beneficial effects on workers. However, the personalities of workers also affected their preferrence for and response to different styles of supervision. Workers who were dependent or authoritarian preferred authoritarian leadership to participative leadership, and performed better under it, while workers with the personality characteristic of independence preferred the participative style of leadership and were most productive with this kind of leader. This work appears to demonstrate that satisfaction with power position in a practical situation may be a function of personality. Vroom (1959) emphasized that studies of participation which failed to consider the interaction between participation and personality could only lead to average statements for all members of the group under investigation. These average statements would necessarily be inaccurate in some individual cases.

O'Brien (1969) in his analysis of leadership in organizational settings has also stressed the need to pay greater attention to personality variables:

> Theories of organizational leadership are alike in asserting that both organizational and personality variables are important. However, most of them fail to define specifically the set of personality and organizational variables they deal with and so are unable to describe fully the way in which such variables interact in determining organizational productivity and

worker satisfaction (O'Brien, 1969, p. 47).

The evidence which has been discussed indicates that though there is a general tendency to prefer a position of high social power, individuals' satisfaction in power relations may be mediated by personality variables. The form of this interaction between personality and social power may be of particular relevance for an understanding of real-life situations outside the laboratory. Thus the personality of a member of an organization is similarly likely to be an important determinant of his satisfaction with prevalent organizational power structures.

Job Satisfaction

The worker's attitude toward his role in an organization is usually termed "job satisfaction", or "morale" (Vroom, 1969). Though it is now generally accepted that job satisfaction and productivity are not necessarily related in the short-term (Kahn, 1960; Vroom, 1964), job satisfaction has been a variable of considerable importance in prevailing contemporary approaches to organizational and social functioning. Such approaches, drawing on the classic Hawthorne studies, and the work of Maslow (1964) tend to emphasize a human relations orientation both as valuable in itself and as offering the most effective means of achieving organizational efficiency in the long-term. Indeed, some definitions of total organizational efficiency take into account workers' personal outcomes (Kahn, 1960). It is well-recognized that workers' satisfaction will

affect such long-term indices of organizational efficiency as absenteeism and labour turnover (Tannenbaum, Weschler, & Massarik, 1961), though these concomitants of workers' affective reactions may not be evident in daily productivity returns.

Herzberg (1959) focussed particular attention on job satisfaction in the context of a general analysis of the motivation for work, and extended his analysis in a later publication to apply to motivation in general (Herzberg, 1966). His two factor "Motivation-Hygiene" theory of motivation conceives of satisfaction and dissatisfaction as independent and parallel continua. Job dissatisfaction is mediated by hygiene factors, which refer to the individual's attitudes toward the context in which his work is performed, and are related particularly to the rewards obtained in exchange for work. Job satisfaction is mediated by "motivation" factors, which refer to the individual's attitudes toward the content of the job, and relate to factors like intrinsic interest in the task and the degree of responsibility held for the performance of the task. Thus "hygiene" factors appear to be controlled mainly by avoidance needs and simply perform a maintaining function, maintaining the individual free from basis wants. "Motivation" factors seem to act in the service of a need to utilize and expand creative capacities, and also appear to imply a desire for the attainment of increased social power. Therefore, in terms of Herzberg's analysis, the development of sustained positive job attitudes

appears to depend on aspects inherent in the work, which will allow the exercise of power and lead to increased possibilities of self-fulfillment.

Rogers (1968) has expressed concern at the deficiencies of modern society with respect to human relations, and called for greater emphasis within organizations on the needs and feelings of people. He pointed out that "...only out of the communicated knowledge of all members of the organizations can innovation and progress come..." (Rogers, 1968, p. 276). In order to achieve effective levels of ease and efficiency in communication, a foundation of satisfactory interpersonal relations is, he believes, indispensable. In response to Rogers' point, Duhl (1969) agreed that modern society is inadequate in its treatment of human relations and reiterated the importance of taking into account interpersonal relations variables in the design of organizational activities. In an analysis of current trends and their effect on the future, he predicted: "...the new ideology and the new value system will be the ideology and value system that go with high regard for interpersonal relations, for love, for concern..." (Duhl, 1969, p. 283).

Internal-External Control, Social Power, and Satisfaction

The evidence which has been presented suggests that an individual's expected locus of control of reinforcement, represented by the personality dimension of internal-external control, may be congruent with his preferred locus

of control of reinforcement. Therefore, it seems that an individual's satisfaction with the amount of control he possesses in a given situation, will be a function of the degree of congruency between his standing on the personality dimension of internal-external control and the actual locus of control. Actual locus of control may be empirically represented in terms of power position in a communication network. For those individuals with a high degree of social power, the actual control of relevant outcomes resides within themselves. For those who possess a low degree of social power, the actual control of relevant outcomes emanates more from others than from themselves.

This line of reasoning suggests that satisfaction with power position may be a function of the interaction between power position and internal-external control. Specifically, it is hypothesized that:

(1) Satisfaction with power position in a task-oriented communication network will be determined by the interaction of the personality dimension of internal-external control with the actual degree of social power possessed.

The following four corollaries can be derived from hypothesis (1):

(a) Individuals with a belief in internal control as opposed to external control will show greater satisfaction with a position of high power than a position of low power.

(b) Individuals with a belief in external control as opposed to internal control will show greater satisfaction with

a position of low power than a position of high power.

(c) In the high power position, individuals with a belief in internal control will be more satisfied than individuals with a belief in external control.

(d) In the low power position, individuals with a belief in external control will be more satisfied than individuals with a belief in internal control.

If individuals are assigned to their power position by a person with whom they are unacquainted, it follows that their affective reactions to this person will be analogous to their affective reactions to their power position. Therefore, hypothesis (2) follows logically from hypothesis (1):

(2) Satisfaction with the person assigning power in a communication network will be determined by the interaction of the personality dimension of internal-external control with the actual degree of social power assigned.

The following four corollaries can be derived from hypothesis (2):

(e) Individuals with a belief in internal control as opposed to external control will be more satisfied with a person who assigns them to a position of high power, than with a person who assigns them to a position of low power.

(f) Individuals with a belief in external control as opposed to internal control will be more satisfied with a person who assigns them to a position of low power than with a

person who assigns them to a position of high power.

(g) When assigned to a position of high power, individuals with a belief in internal control will be more satisfied with the assigning person, than individuals with a belief in external control.

(h) When assigned to a position of low power, individuals with a belief in external control will be more satisfied with the assigning person, than individuals with a belief in internal control.

CHAPTER II

METHOD

Subjects

Subjects were drawn from a sample of three hundred and twenty-one students (one hundred and seventy males, one hundred and fifty-one females) enrolled in introductory psychology classes at the University of Windsor. On the basis of scores on a personality inventory, fifty-two subjects (twenty-seven males, twenty-five females) were selected for the experimental sessions.

Materials

Internal-External Control Scale

The Internal-External Control (I-E) Scale (Rotter, 1966) is a forced-choice questionnaire consisting of twenty-nine items, six of which are filler items (see Appendix A). Each item consists of alternative expectancy statements - one characteristic of a belief in internal locus of control and the other of a belief in external locus of control. The scale is scored in the direction of external control. Rotter (1966) reported the results of factor and item analyses, which showed that the scale had high internal consistency. Extensive reliability studies indicated test-retest reliability ranging from .49 to .83. There were satisfactory correlations with other methods of assessing

the same variable, such as: a Likert scale; interview assessment; and a projective technique. Low, non-significant correlations of the scale with such variables as intelligence, social desirability, and political liberalness, indicated discriminant validity. The relationships between I-E Scale scores and the behavioural criteria previously described (see page 3) are evidence of construct validity.

Hersch and Scheibe (1967) provided further support for the reliability and validity of the I-E Scale. They reported test-retest reliability ranging from .43 to .84; no significant correlation with intelligence; a significant positive correlation between internal control and self characterization on the Gough Adjective Check List as powerful, independent, effective, active; and a significant positive relation between internal control and actual personal achievement in a mental hospital setting. These researchers also noted however, that internally controlled subjects tended to be more homogeneous in their test performance than externally controlled subjects. It was suggested that there might be a diversity in the psychological meaning of external control, possibly in terms of the extent to which external forces were considered to be benevolent or malevolent.

This initial doubt concerning the homogeneity of the I-E Scale has gathered greater force with subsequent research. Thomas (1970) administered the I-E Scale to liberal and conservative parents of college students, who had been matched for high political activity (a behavioural

criterion conceptually related to internal control). He found that both the liberal parents and their student offspring scored lower on internal control than the respective conservative groups. Thomas interpreted these results as evidence of a conservative bias in the I-E Scale. He pointed out that these findings indicated that performance on the I-E Scale might be affected as much by political and social beliefs as by the generalized expectancy of locus of control.

Gurin, Gurin, Lao, and Beattie (1969) performed a factor analysis of the I-E Scale using black American college students as subjects and obtained two major factors. The factorial distinction seemed to be based on whether items referred to one's personal outcomes or to the outcomes of others. Items phrased in the first person loaded heavily on a factor labelled as "Personal Control", while items phrased in the third person loaded heavily on a factor labelled "Control Ideology", which seemed to measure the degree of acceptance of the traditional Protestant Ethic. The "Personal Control" factor appears to be closer both to Rotter's notion of internal-external control, and Minton's notion of subjective power, while the "Control Ideology" factor appears to refer to cultural beliefs. Gurin et al. found in fact that it was the Personal Control factor which related in the predicted manner to expectancy of success, self-confidence, and achievement, while scores on the total I-E Scale showed no relation to these variables.

Lao (1970), in another study with black college students, found that an internal score on the Personal Control factor was related to academic performance, academic self-confidence, and educational expectations and aspirations, while an internal score on the Control Ideology factor was related to socially innovative behaviour. Lao noted that the I-E scale seemed to be more heavily loaded on the Control Ideology factor, since a larger proportion of items were in the third person. She suggested that previous research results obtained with the I-E Scale might be explicable in terms of a lesser discrepancy between Personal Control and Control Ideology for whites than for blacks.

Mirels (1970) and Minton (1971b) have also found a factorial distinction in responses to the I-E Scale by predominantly white subjects. They used student samples from a large Midwestern state university in the United States, and the University of Windsor in Canada, respectively. Both studies utilized a similar factor analytic method. Response intercorrelations were factored by the principal components method with a minimum eigen-value of .8 for computation of components. Components were rotated by means of Kaiser's (1958) Varimax method, using a minimum eigen-value of 1.0 for factor rotation. The responses of males and females were analysed separately.

This method, in both studies, yielded two factors each for males and females. The results of the two studies

showed a considerable degree of overlap in terms of the items which loaded most heavily on the two factors. Items loading heavily on the first factor seemed to refer to the relative importance of ability and hard work as against luck or fate, in achieving personally relevant outcomes (e.g. "In my case getting what I want has little or nothing to do with luck" vs. "Many times we might just as well decide what to do by flipping a coin."). Items loading heavily on the second factor were concerned mainly with the individual's beliefs regarding the sources of political and social power (e.g. "The average citizen can have an influence in government decisions." vs. "This world is run by the few people in power, and there is not much the little guy can do about it."). Thus, while items loading on the first factor (labelled "Personal Control" by Minton) were concerned largely with control at the personal level; items loading on the second factor (labelled "System Modifiability" by Minton) referred to control at the societal and global levels.

The factorial distinction which emerged in these two studies is somewhat different from that obtained by Gurin et al. Thus, within items relfecting the theme of personal control, Gurin et al. found a distinction between those items stated in the first person, and those stated in the third person. Gurin et al.'s Personal Control Ideology factor referred to the items stated in the first person. This first person-third person distinction in items refer-

ring to personal outcomes was not found in the studies of Mirels and Minton. Thus, Minton's "Personal Control" factor includes items phrased in the third person as well as the first person. The "System Modifiability" factor found by Mirels and Minton is similar to a minor factor obtained in Gurin et al.'s work (accounting for only a small part of the variance for black subjects). Minton (1971a) points out that the lack of equivalence among factor analytic results may be due to the different samples of subjects used. Thus, the first person-third person distinction may have been a more salient element in the power beliefs of black students as opposed to white students.

The findings of Mirels and Minton suggest that the factorial discrepancy in the I-E Scale which has appeared since Rotter's original factor analysis (in the early 1960's) may reflect general changes in the last few years, particularly for college students, who have become increasingly involved in political affairs during the last decade. Minton suggests that:

> As a consequence of this involvement many students may now make a distinction between beliefs concerning felt mastery over the course of one's life (personal control) and beliefs concerning the responsiveness of political institutions to citizen efforts toward active participation in political and social affairs (system modifiability) (Minton, 1971a, p. 8).

Procedure

The I-E Scale was administered to a number of classes in introductory psychology during December 1970, and

January 1971, and was completed by three hundred and twenty-one students. Subjects were selected on the basis of their scores on the Personal Control factor alone, rather than the total scale scores, since it was felt that this factor offered a purer measure of "subjective power". Personal Control was measured by responses to nine items (see Appendix B), each of which loaded ±.25 or greater for both males and females, on the Personal Control factor (Minton, 1971b). Consistent with the keyed direction of the total I-E Scale, the Personal Control items were scored in the direction of external control. Those subjects whose scores fell within the upper and lower thirds of the distribution of Personal Control scores, were classified as externally controlled and internally controlled respectively. The upper third of the distribution included scores of five to nine, while the lower third of the distribution included scores of zero to two. A form letter (see Appendix C) was sent to all persons within these two populations. The letter requested recipient's co-operation as subjects in an experiment concerned with the "communication of people in groups who are working at simple tasks", whose findings it was hoped would lead to improvements in organizational relations.

Subjects were randomly selected from the populations of internally and externally controlled individuals, and randomly assigned to one of two experimental conditions by an accomplice of the experimenter. The experimenter

therefore had no knowledge of subjects' I-E scores when conducting the experiment. Selected subjects were subsequently contacted again by telephone, and their participation in the experiment was requested. During the telephone conversation, emphasis was placed on the simplicity of the tasks to be performed; the group aspects of the experiment; and the potential utility of the research in advancing the understanding of organizational relations.

Experimental groups were made up of subjects of the same sex, in order to avoid the possible confounding effects of sex in mixed-sex groups. Three subjects were scheduled for each experimental session. If only two appeared, a confederate filled in as the third subject, since it was necessary for the groups to appear to be of size three, though all three did not need to be bona fide subjects. The experimental task was similar to that employed by Trow (1957). It consisted of a series of eight common objects, whose outlines were to be cut out of plain paper, in the given order, by means of scissors (see Appendix D).

The physical arrangement for the experimental sessions consisted of a network of four interconnected small rooms, as shown below. Each room was equipped with a table and a chair. Each table was supplied with plain paper, pencils, and scissors, and three small cardboard trays marked: "IN", "OUT, and "COMPLETED OUTLINES". The list of tasks lay face down on top of the pile of plain paper.

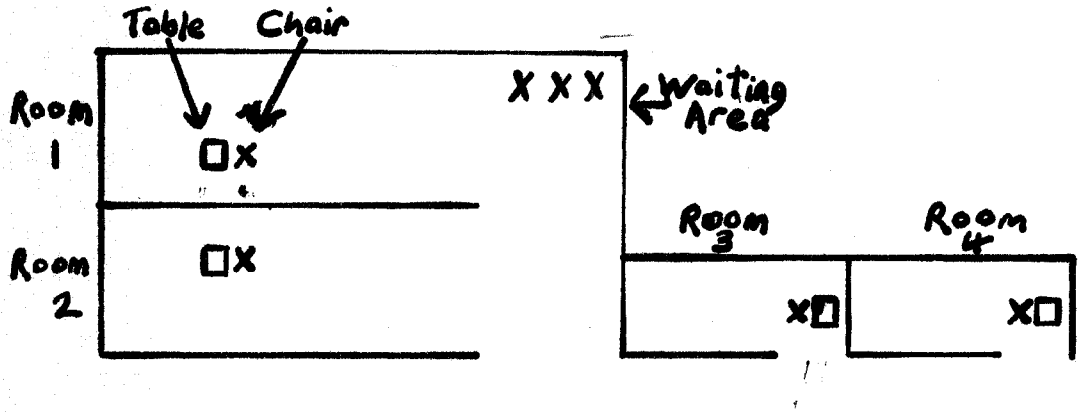


Fig. 2 The Experimental Setting

On arrival, subjects were ushered in to room 1 and seated in the waiting area, as indicated. When all the subjects for an experimental session had arrived and were seated, the experimenter introduced the experiment as follows:

> Thank you all for coming. I am Dr. Minton's assistant, and am conducting the experiment for him. As you may have gathered, this is an experiment to investigate the communication processes between people in a group, who are performing a series of tasks. Each of you will be working separately in different rooms. You will be working at simple tasks, and writing messages to each other about the tasks you are doing. The situation you will be in may seem artificial, but it is in fact quite a close approximation to the kind of situation which is found in most organizational settings. Here are the written instructions for the procedure you will be following. You'll be able to keep these instructions with you as a reference, while you are working. I will read them through with you now.

The experimenter then handed out typed copies of the instructions, which he proceeded to read aloud as follows:

> When each of you sits down in your room, you will find on your table a list of eight tasks, which must be done in the order on the list. The tasks are to cut out outlines of the listed objects from paper, using the scissors on your table. Your list therefore, will consist of a series of eight objects to be cut out. Alongside each

of the objects will be a number. This number is the code number for that object, and in your written messages you can refer to objects only by means of their code numbers. The objects are common objects, which should be fairly simple to cut out in outline, e.g. horse, tree, fork. You should try to make the outlines recognizable depictions of the objects, but beyond this do not be too concerned with their quality. There are sixteen different tasks altogether, for the whole group to do. This means that some of the tasks on your list will be identical with those of other broup members.

The goal of the group is to finish as many different tasks as possible, in as short a time as possible. Since some of your tasks will be identical with those of other group members, you will clearly need to communicate with one another in order to avoid duplicating outlines, and therefore increase the efficiency of the group. However, the only way you are allowed to communicate is by writing notes and passing them to me to deliver. The only thing you are allowed to write in your notes are two numbers, one of these numbers being the code number for the object which you will be cutting out presently, and the other the code number for the object which you will be cutting out next. In the upper left-hand corner of the sheet of paper with your list of tasks, you will find a letter, which will be either W, X, or Y. This is your identification letter and you must sign all your notes with it, and address all your notes with the appropriate identification letters.

For example, if you should be given the identification letter W and you want to write notes to other group members to tell them that the code numbers of your next two tasks are seven and ten, you should write two separate notes, like this:

To X. 7, 10
From W.

To Y. 7, 10
From W.

There will be trays marked IN and OUT at the corners of your table. I will place all the messages which have been addressed to you in the IN tray, and you should put the messages you wish to send in the OUT tray, where I will pick them up. The tray in the middle of your table is for completed outlines.

In order to make the situation similar to the real-life one we are trying to approximate, some objects have been given more than one code number. This means that although you might have the same object in your list as someone else in the group, his code number for this object might not be the same as your code number. In other words, if the

code numbers in a note that you receive do not correspond to any of the code numbers in your list, there can be two possible explanations: (1) the other group member is cutting out objects which are not on your list; (2) you do have one or both of these objects which are on your list, but your code numbers for these objects are not the same as the other person'a code numbers. Therefore, in order to interpret any code numbers that are sent to you, you need to have access to the key in which all of the sixteen objects and their associated code numbers are listed. One of you, whose identification letter will be X will find that you have been given this key underneath your list of tasks. It is purely a matter of chance which of you receives the key, because the room in which the key is placed is varied from experiment to experiment. The person who has the key will be the leader of the group. Unlike the rest of you, the leader is not limited to the kinds of messages shown above. He can write whatever he likes in his notes and therefore he can use the key in any manner that he thinks will be most efficient in preventing duplication of effort.

When you sit down in your room then, this is what you actually have to do:

Turn over the top sheet of paper. In the top left-hand corner will be your identification letter. Below this, will be your list of eight objects to be cut out, with their code numbers alongside.

If you are the leader of the group, your identification letter will be X, and the key will be printed on another sheet of paper underneath. You must then decide how to use the key in order to maximize the efficiency of the group, and send messages to the other group members telling them which method of working you have chosen for the group. Remember you must still complete your own list of eight tasks.

If you are not the leader, but are given identification letter W or Y, you should follow this procedure:

Write notes to the other two group members, giving the code numbers of your first two objects. Then begin to cut them out. While you are doing this, you will receive messages from the other two group members. One of these messages will be from the group leader and will explain how he has decided to use the key. You should then adopt this three-step working procedure:

(1) Read any notes that come to you. Using whatever form of access to the key the leader gives

you, cross off your list any objects which are referred to in incoming notes.

(2) Write your notes, giving the code numbers of your next two tasks. Send separate notes to both of the other group members, unless the leader directs otherwise, in which case follow the leader's instructions.

(3) Do your two tasks. Continue to go through this same three-step procedure, until all the eight tasks of your list have either been done by you, or crossed off your list. Then raise your arm to indicate that you have finished. You will then be given a brief questionnaire.

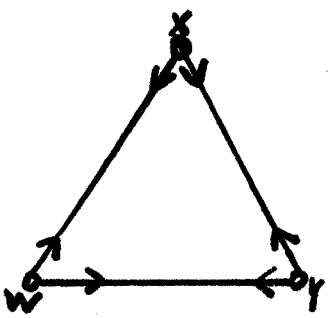
The major points in the instructions were then repeated by the experimenter, and subjects were encouraged to ask questions about any aspects of the instructions which might be unclear.

When a subject indicated that he had finished the task, his time of finishing was noted, and he was given a post-experimental questionnaire to fill out. When all subjects had completed this questionnaire, the purpose and methods of the experiment were explained,and subjects were requested not to discuss the experiment with anyone else during the following two weeks.

The purpose of the instructions was to give the subjects the impression that they were part of a functioning communication network, with the experimenter acting as the message carrier. In actuality, working from room 3, the experimenter intercepted all messages, and substituted a set of programmed messages. This experimental manipulation allowed the placing of all subjects in exactly the same position (W) in the communication network. All subjects were given exactly the same series of tasks, and in a

given experimental condition, received the same messages at approximately the same relative points in their series of tasks (see Appendix D). These messages defined one of two experimental conditions:

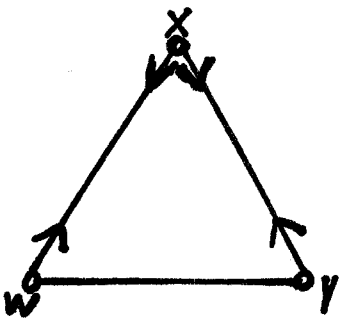
High power: In this condition, soon after the start, subjects received a note from the leader (X) which read: "I have the key. I am sending a copy of it to both you and Y so you can use it for yourselves. Here it is..." This message therefore, defined the following communication network:



The possession of the key and the information contained in incoming messages enabled the subject to decide for himself whether to cut out any particular outline in his list, when he reached it. He was able to monitor the activities of other group members for himself, and could therefore direct his own activities to fit the requirements of the group. The "leader" in this condition, may be considered to have behaved in a "democratic" manner in setting up a decentralized communication network.

Low power: In this condition, soon after the start, subjects received a note from X which read: "I have the key. Send your messages only to me and I will tell you

which objects to cross off your list. Y will do the same." This message therefore defined the following communication network:



Without access to the key, the subject was entirely dependent on the leader for information concerning the group's activities as a whole. Therefore, his own activities were dependent on the leader's analysis of group requirements, and subsequent directives. The subject's only means of influencing group outcomes was by his speed of working. The "leader" in this condition, may be considered to have behaved in an "autocratic" manner, in setting up a centralized communication network, with himself at the centre.

Post-Experimental Questionnaire

The post-experimental questionnaire (see Appendix E) contained fourteen items. Responses to the first eleven items were made on a seven-point scale, with descriptive statements beneath scale marks. Five of these items were included to test for the possibility that uncontrolled aspects of the experimental situation might have confounded the relation between subject's I-E scores and their satisfaction with their power position or their leader. The questions: "How much interest did you have in the experiment

as a whole?" and How much did you like cutting out the outlines?", opened the questionnaire, and checked the possibility respectively of differential enjoyment of the task and differential involvement in the experimental situation, by internally and externally controlled subjects. The item: "How satisfied are you with your performance of your total job?", checked for possible differences between internally and externally controlled subjects in their satisfaction with their personal performance. The item: "How important was it to you personally, to do your job in the group efficiently?", checked for possible personality-mediated differences in ego-involvement in the task. The item "How efficient do you think that this method of working was?", checked the possibility that internally and externally controlled subjects held different opinions regarding the efficiency of the method of working.

Four questionnaire items were directly related to the hypotheses underlying this study. Subjects' satisfaction with the leader was measured by their responses to the question: "In general, how satisfied were you with the leader?" Three items tested subjects' satisfaction with the power position to which they had been assigned by the leader. They were phrased in different terms, in an attempt to tap the several different facets of satisfaction with power position. Thus the items referred to satisfaction with the amount of independence associated with a given position, satisfaction with the method of working, and relative

preferrence for the more powerful position of the leader:
"In performing your job, how satisfied were you with the amount of independence that the leader gave you?"
"How much did you like the method of working that the leader chose for the group?"
"Would you have liked your job in the group more, or less, if you had been the leader?"

These four crucial items were placed at numbers three, four, seven, and eight in the questionnaire. This sequence was chosen in order to provide respondents with some opportunity to adapt to the questionnaire, and to mask the hypotheses under investigation.

One item was included as a check on whether the experimental manipulation had been successful in inducing subjects to perceive themselves as having high or low power: "How independent do you feel that you were in doing your job?"

The autonomy statement used by Trow (1957) constituted another questionnaire item: "How important is it to you to carry out the business of life in an independent and self-reliant fashion?" Trow computed a subject's relative need for autonomy on the basis of his rating of the importance of this statement to him personally, together with his ranking of its comparative importance to him among four other statements of social need (Achievement, Affiliation, Recognition, and Cognition). This item was included to examine whether there was any relation between Trow's

measure of "need for autonomy" and the I-E Scale.

Rubin and Moore (1971) showed that the most efficient questionnaire method of assessing subject's suspicions of deception involved open-ended items which requested subjects for their impressions rather than memories of the experiment. Three open-ended items of this type completed the questionnaire. A subject was classified as suspicious and eliminated from the analysis, if he indicated any suspicion of deception either in his questionnaire responses or in his immediate post-experimental comments, prior to de-briefing. In terms of these criteria, there were no suspicious subjects.

CHAPTER III

RESULTS

Subjects' responses to each of the eleven scaled questionnaire items were subjected to a 2 x 2 x 2 (personality x power position x sex) unweighted means analysis of variance (Winer, 1962). The results of these analyses will be presented separately for each item. Results for item 10 ("How independent do you feel that you were in doing your job?") will be considered first, since this item was included to check the experimental manipulation of power position. The mean responses in each of the experimental conditions and the results of the analysis of variance are shown in Table 1. It can be seen that there was a significant main effect for power position ($p < .025$) due to greater feelings of independence in the high power than in the low power condition. Thus it appears that the experimental manipulation of power position was generally successful. However, a significant sex x power position interaction was also obtained ($p < .05$). The specific differences causing this interaction were investigated by means of the Duncan New Multiple Range Test, which indicated that the significant interaction was due in part to greater feelings of independence by males in the high power condition when compared with males in the low power condition and females in the high power condition.

TABLE 1

FEELINGS OF INDEPENDENCE IN THE DIFFERENT EXPERIMENTAL CONDITIONS

Mean Responses*

	Low Power		High Power	
	Males	Females	Males	Females
Internals	4.43(n=7)	2.60(n=5)	2.00(n=7)	2.50(n=6)
Externals	4.57(n=7)	3.00(n=7)	2.33(n=7)	3.43(n=7)

Summary of the analysis of variance

Source of variation	df	MS	F	p
Personality (A)	1	2.62	0.91	
Power Position (B)	1	19.78	6.84	<.025
Sex (C)	1	2.62	0.91	
A x B	1	0.00	0.00	
A x C	1	0.54	0.18	
B x C	1	15.26	5.26	<.05
A x B x C	1	4.16	1.44	
Residual	44	2.89		

*1 = very independent; 2 = moderately independent; 3 = slightly independent; 4 = neither independent nor dependent; 5 = slightly dependent; 6 = moderately dependent; 7 = very dependent.

Furthermore, differences were found in terms of greater feelings of independence in the low power condition by females as compared to males in the same condition.

In view of these findings, additional 2 X 2 (personality X power position) unweighted means analyses of variance were performed separately for both sex groups, on each item. The results of these analyses for item 10 are presented in Table 2. For males, the only significant effect was due

TABLE 2

FELLINGS OF INDEPENDENCE IN THE DIFFERENT EXPERIMENTAL CONDITIONS

Summary of the analysis of variance for males

Source of variation	df	MS	F	p
Personality	1	1.07	0.43	
Power Position	1	31.45	12.73	$<.01$
Personality x Power Pos.	1	0.54	0.22	
Residual	23	2.47		

Summary of the analysis of variance for females

Source of variation	df	MS	F	p
Personality	1	2.73	0.81	
Power Position	1	0.18	0.05	
Personality x Power Pos.	1	0.40	0.12	
Residual	21	3.35		

to power position, that is they felt more independent in the high power than in the low power condition ($p < .01$). For females, there were no significant differences. It seems therefore, that the experimental manipulation of power position produced the desired effects for males, but not for females.

Satisfaction with Power Position

Three items on the questionnaire were of direct relevance to the first hypothesis, which postulated that the personality dimension of internal-external control would interact with assigned power position, in determining subjects' satisfaction with their power position. The mean responses in each of the experimental conditions, and the results of analysis of variance, for these three items, for all subjects (N=52), undifferentiated with respect to sex, are shown in Tables 3, 4, and 5. The hypothesis was not supported by the results for any of the items, since there were no significant personality x power position interactions. For item 3 ("In performing your job, how satisfied were you with the amount of independence that the leader gave you?"), there was a significant main effect due to power position ($p < .05$). Subjects were more satisfied in the high power condition than in the low power condition. The results for item 7 ("Would you have liked your job in the group more, or less, if you had been the leader?") indicate that sex was a significant source of variance ($p < .01$). It appears that males to a greater extent than females would have liked their job in the group more if they had been the leader. The only significant effect for item 8 ("How much did you like the method of working that the leader chose for the group?") was a three-way personality x power position x sex interaction ($p < .01$). The Duncan Test indicated that this was caused by internally controlled females in

TABLE 3

SATISFACTION WITH THE AMOUNT OF INDEPENDENCE GIVEN BY THE LEADER (ITEM 3).

Mean Responses*

	Low Power		High Power	
	Males	Females	Males	Females
Internals	3.29	2.60	1.71	1.83
Externals	2.29	2.71	1.83	2.29

Summary of the analysis of variance

Source of variation	df	MS	F	p
Personality (A)	1	0.64	0.34	
Power Position (B)	1	8.55	4.59	<.05
Sex (C)	1	0.64	0.34	
A x B	1	1.75	0.94	
A x C	1	1.72	0.92	
B x C	1	0.60	0.32	
A x B x C	1	0.42	0.22	
Residual	44	1.86		

*1 = very satisfied; 2 = moderately satisfied; 3 = slightly satisfied; 4 = neither satisfied nor dissatisfied; 5 = slightly dissatisfied; 6 = moderately dissatisfied; 7 = very dissatisfied.

TABLE 4

REPORTED POTENTIAL LIKING FOR LEADER'S JOB (ITEM 7)

Mean Responses*

	Low Power		High Power	
	Males	Females	Males	Females
Internals	2.43	4.20	3.00	4.33
Externals	3.29	3.57	3.17	4.71

Summary of the analysis of variance

Source of variation	df	MS	F	p
Personality (A)	1	0.49	0.21	
Power Position (B)	1	3.97	1.69	
Sex (C)	1	19.37	8.24	<.01
A x B	1	0.00	0.00	
A x C	1	1.30	0.55	
B x C	1	0.00	0.00	
A x B x C	1	3.92	1.67	
Residual	44	2.35		

*1 = would have liked leader's job very much more; 2 = moderately more; 3 = slightly more; 4 = neither more nor less; 5 = slightly less; 6 = moderately less; 7 = very much less.

TABLE 5

LIKING FOR THE METHOD OF WORKING (ITEM 8)

Mean Responses*

	Low Power		High Power	
	Males	Females	Males	Females
Internals	2.57	1.60	1.43	3.00
Externals	1.28	2.43	1.67	2.00

Summary of the analysis of variance

Source of variation	df	MS	F	p
Personality (A)	1	1.15	0.90	
Power Position (B)	1	0.38	0.30	
Sex (C)	1	3.46	2.72	
A x B	1	0.00	0.00	
A x C	1	0.64	0.50	
B x C	1	2.05	1.61	
A x B x C	1	9.36	7.37	<.01
Residual	44	1.27		

*1 = liked very much; 2 = liked moderately; 3 = liked slightly; 4 = neither liked nor disliked; 5 = disliked slightly; 6 = disliked moderately; 7 = disliked very much.

high power positions being less satisfied with the method of working than internally controlled males in high power positions and externally controlled males in low power positions.

The relevant analyses of variance for females are shown in Table 6. The first hypothesis was not supported by the data for any of the three items. There were no significant personality x power position interaction effects, and none of the other effects reached significance.

The results and anlyses for males are shown in Table 7. The results for item 8 provided support for the first hypothesis. There was a significant personality x power position interaction effect ($p < .01$), which is presented graphically in Figure 3. Since specific a priori

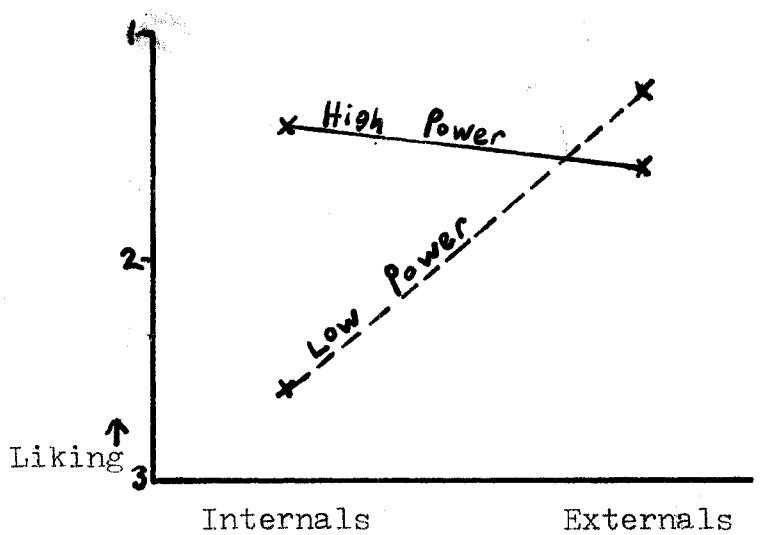


Fig. 3. Male's Liking for Method of Working.

predictions (corollaries a to d) were advanced, regarding

TABLE 6:

FEMALE'S SATISFACTION WITH THE AMOUNT OF INDEPENDENCE GIVEN BY THE LEADER (ITEM 3)

Summary of the analysis of variance

Source of variation	df	MS	F	p
Personality	1	0.5	0.22	
Power Position	1	2.17	0.97	
Personality x Power Pos.	1	0.19	0.08	
Residual	21	2.23		

FEMALE'S REPORTED POTENTIAL LIKING FOR THE LEADER'S JOB (ITEM 7)

Summary of the analysis of variance

Source of variation	df	MS	F	p
Personality	1	0.00	0.00	
Power Position	1	2.33	0.95	
Personality x Power Position	1	1.65	0.68	
Residual	21	2.44		

FEMALE'S LIKING FOR THE METHOD OF WORKING (ITEM 8)

Summary of the analysis of variance

Source of variation	df	MS	F	p
Personality	1	0.04	0.02	
Power Position	1	1.44	0.64	
Personality x Power Pos.	1	5.44	2.43	
Residual	21	2.23		

the nature of this interaction, two-tailed t-tests were used to test these predictions (Li, 1964). Three of the corollaries were strongly supported: corollary (a), that internally controlled individuals would prefer a high power to a low power position ($p < .001$); corollary (b), that externally controlled individuals would prefer a low power to a high power position ($p < .01$); and corollary (d), that externally controlled individuals would be more satisfied than internally controlled individuals in a low power position ($p < .001$). Support for corollary (c), that internally controlled individuals would be more satisfied than externally controlled individuals in the high power position, though not reaching significance, was in the predicted direction ($p < .10$). There was also a significant main effect due to personality ($p < .05$), for item 8. This effect indicated that externally controlled males were more satisfied with the method of working than internally controlled males.

The data for items 3 and 7 however, did not support the first hypothesis. The only significant effect obtained, was that of power position for item 3. Males were generally more satisfied in the high power than in the low power position.

Satisfaction with the Leader

The second hypothesis, which postulated that individuals' satisfaction with the person assigning them to a power position would be a function of the interaction of the personality dimension of internal-external control with actual power position, was tested by responses to

TABLE 7

MALE'S SATISFACTION WITH THE AMOUNT OF INDEPENDENCE GIVEN BY THE LEADER (ITEM 3)

Summary of the analysis of variance

Source of variation	df	MS	F	p
Personality	1	1.30	0.85	
Power Position	1	6.99	4.57	<.05
Personality x Power Position	1	2.10	1.38	
Residual	23	1.52		

MALE'S REPORTED POTENTIAL LIKING FOR LEADER'S JOB (ITEM 7)

Summary of the analysis of variance

Source of variation	df	MS	F	p
Personality	1	1.81	0.83	
Power Position	1	0.34	0.16	
Personality x Power Position	1	0.81	0.37	
Residual	23	2.17		

MALE'S LIKING FOR METHOD OF WORKING (ITEM 8)

Summary of the analysis of variance

Source of variation	df	MS	F	p
Personality	1	1.85	4.62	<.05
Power Position	1	0.94	2.35	
Personality x Power Position	1	3.94	9.85	<.01
Residual	23	0.40		

the item: "In general, how satisfied were you with the leader?" Table 8 gives the mean responses and analyses of variance for this item. The hypothesis recieved no support from the analyses for all subjects unselected with respect to sex, and for females. The only significant effect obtained was a three-way personality x power position x sex interaction ($p < .025$). Inspection of the separate analyses for sex groups indicated that this interaction was caused by a significant personality x power position effect for males, in conjunction with an interaction in the reverse direction for females (e.g. internally controlled females were more satisfied with the leader in the low power condition, while externally controlled females were more satisfied with the leader in the high power condition), though this latter effect did not reach statistical significance.

The data for males supported the hypothesis, revealing a significant personality x power position interaction ($p < .025$), which is presented graphically in Figure 4. Specific corollaries were tested by means of two-tailed t-tests. These analyses indicated strong support ($p < .01$) for corollary (h), that externally controlled individuals would be more satisfied than internally controlled individuals with the person assigning them to a low power position. Support for corollary (e) that internally controlled individuals would be more satisfied with the leader assigning them to a high power position than the leader assigning them to a low power position approached significance

TABLE 8

SATISFACTION WITH THE LEADER

Mean Responses*

	Low Power		High Power	
	Males	Females	Males	Females
Internals	2.28	1.20	1.71	2.17
Externals	1.14	1.85	1.67	1.28

Summary of the analysis of variance for all subjects

Source of variation	df	MS	F	p
Personality (A)	1	1.61	1.92	
Power Position (B)	1	0.10	0.12	
Sex (C)	1	0.07	0.08	
A x B	1	0.00	0.00	
A x C	1	0.71	0.84	
B x C	1	0.15	0.18	
A x B x C	1	5.59	6.65	<.025
Residual	44	0.84		

Summary of the analysis of variance for females

Source of variation	df	MS	F	p
Personality	1	0.12	0.08	
Power Position	1	0.25	0.18	
Personality x Power Position	1	3.62	2.50	
Residual	21	1.42		

Summary of the analysis of variance for males

Source of variation	df	MS	F	p
Personality	1	2.34	7.1	<.025
Power Position	1	0.00	0.00	
Personality x Power Pos.	1	2.03	6.55	<.025
Residual	23	0.31		

*1 = very satisfied; 2 = moderately satisfied; 3 = slightly satisfied; 4 = neither satisfied nor dissatisfied; 5 = slightly dissatisfied; 6 = moderately dissatisfied; 7 = very dissatisfied.

($p < .10$). The remaining two corollaries however, which referred to the relative satisfaction of externally controlled individuals with leaders assigning them to low and high power positions, and the relative satisfaction of internally and externally controlled individuals with leaders assigning them to high power positions, were not supported. Personality was also a significant source of variance ($p < .025$), externally controlled males being more satisfied across power positions than internally controlled males.

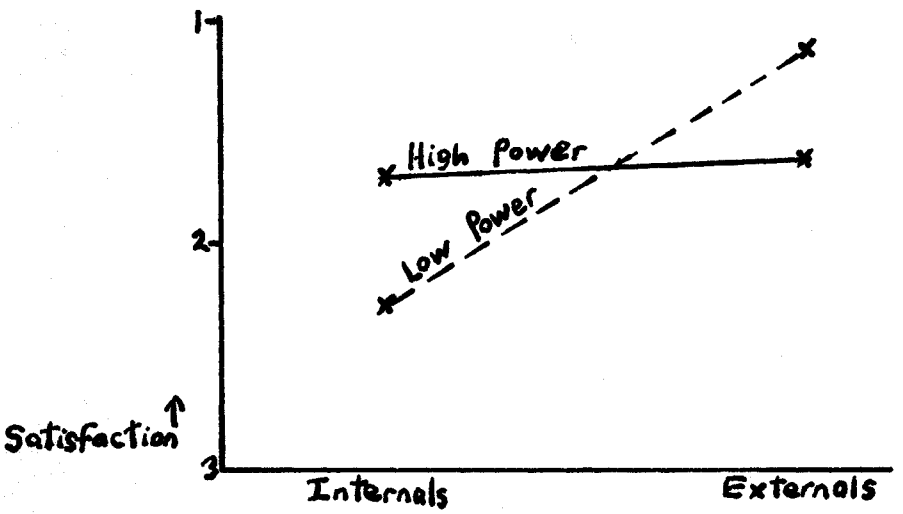


Fig. 4 Male's Satisfaction with the Leader

Checks for Confounding Variables

The mean responses for items included to test for possible confounding variables in the experimental situation are presented in Table 9. Analyses of variance are shown in Appendix F. Table 9 shows that subjects tended to be rather more positive than negative in their enjoyment of

TABLE 9

MEAN RESPONSES* FOR ITEMS CHECKING FOR CONFOUNDING VARIABLES

LIKING FOR THE EXPERIMENTAL TASK (ITEM 1)

	Low Power		High Power	
	Males	Females	Males	Females
Internals	2.86	3.00	2.28	2.33
Externals	4.00	2.14	3.17	2.28

INTEREST IN THE EXPERIMENT (ITEM 2)

	Low Power		High Power	
	Males	Females	Males	Females
Internals	1.71	1.40	2.00	2.33
Externals	2.00	2.00	2.17	1.71

SATISFACTION WITH PERFORMANCE (ITEM 5)

	Low Power		High Power	
	Males	Females	Males	Females
Internals	2.43	2.00	1.86	3.00
Externals	1.86	2.00	2.67	3.00

EGO-INVOLVEMENT WITH THE JOB (ITEM 6)

	Low Power		High Power	
	Males	Females	Males	Females
Internals	1.28	1.20	1.28	1.00
Externals	1.71	1.14	2.00	1.28

RATINGS OF EFFICIENCY OF WORK METHOD (ITEM 9)

	Low Power		High Power	
	Males	Females	Males	Females
Internals	2.28	1.80	1.85	3.33
Externals	1.28	2.57	2.33	2.00

Item 5: 1 = very satisfied; 2 = moderately satisfied; 3 = slightly satisfied; 4 = neither satisfied nor dissatisfied; 5 = slightly dissatisfied; 6 = moderately dissatisfied; 7 = very dissatisfied.

*Item 1: 1 = liked very much; ..... 7 = disliked very much.

Item 2: 1 = very great interest; ... 7 = very great disinterest.

Item 6: 1 = very important; ..... 7 = very unimportant.

Item 9: 1 = very efficient ..... 7 = very inefficient.

the task, displayed considerable interest in the experiment, placed a high degree of importance on the performance of their job, and were generally satisfied with their performance.

Analyses of variance revealed no significant effects for items 1 ("How much did you like cutting out the outlines?"), and 2 ("How much interest did you have in the experiment as a whole?"). For item 6 ("How important was it to you personally to do your job in the group efficiently?"), there was a significant effect due to sex ($p < .05$). Females reported that efficient performance of their job was more important to them, than did males. The only significant effect for item 9 ("How efficient do you think that this method of working was?") was a three-way personality x power position x sex interaction ($F=5.20$, $df=1/44$. $p < .05$). The Duncan test pointed to greater attribution of efficiency by externally controlled males in the low power position, compared to internally controlled females in the high power position, as the main difference causing this interaction.

Analyses of variance for males and females together, and for females alone, for item 5 ("How satisfied are you with your performance of your total job?"), revealed no significant effects. However, for males, there was a significant personality x power position interaction ($F=5$, $df=1/23$, $p < .05$), which is presented graphically in Figure 7. The Duncan test indicated that none of the four individual components of this interaction were significantly different

from one another. The differences constituting this interaction however, though not reaching statistical significance, were all in the direction predicted by the corollaries to the first hypothesis. Also, comparison of Figures 3 and 5 indicates that the form of the personality x power position interaction was similar for items (5) and (8). It is possible therefore, that items (5) and (8) may actually have measured somewhat similar affective reactions.

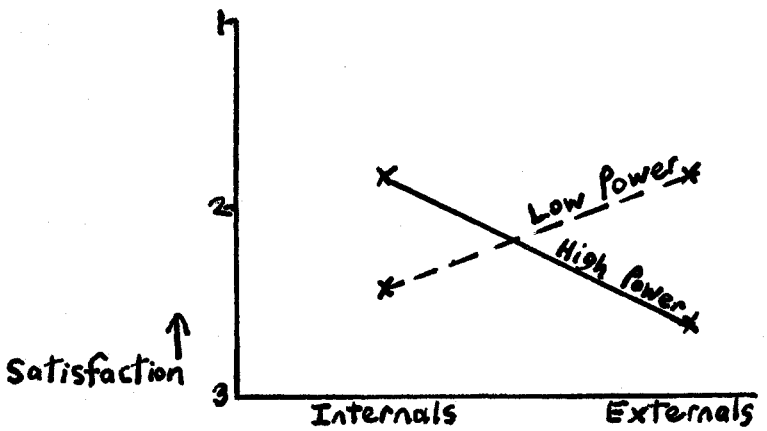


Fig. 5 Satisfaction With Performance

Need for Autonomy

None of the analyses of variance for responses to Trow's need for autonomy statement revealed any significant effects (see Table 10). It appears that subjects generally ascribed high importance to the possession of autonomy, with internally controlled subjects ascribing higher importance than externally controlled subjects, a difference however, which did not reach statistical significance ($p < .10$).

Comparison among Items

To recapitulate, the three items (3, 7 and 8) which

TABLE 10

NEED FOR AUTONOMY

Mean Responses*

	Low Power		High Power	
	Males	Females	Males	Females
Internals	1.43	1.6	1.57	1.14
Externals	1.71	1.57	2.33	1.85

Summary of the analysis of variance for males and females

Source of variation	df	MS	F	p
Personality (A)	1	2.37	3.00	<.10
Power Pos. (B)	1	0.26	0.33	
Sex (C)	1	0.64	0.81	
A x B	1	1.22	1.54	
A x C	1	0.06	0.08	
B x C	1	0.11	0.14	
A x B x C	1	0.06	0.08	
Residual	44	0.79		

Summary of the analysis of variance for females

Source of variation	df	MS	F	p
Personality	1	0.07	1.34	
Power Position	1	0.00	0.00	
Personality	1	1.57	3.14	<.10
Residual	21	0.50		

Summary of the analysis of variance for males

Source of variation	df	MS	F	p
Personality	1	1.79	1.70	
Power Position	1	0.94	0.89	
Personality x Power Pos.	1	0.40	0.38	
Residual	23	1.05		

*1 = autonomy very important; 2 = moderately important; 3 = slightly important; 4 = neither important nor unimportant; 5 = slightly unimportant; 6 = moderately unimportant; 7 = very unimportant.

were designed to measure the first hypothesis gave rise to differing results, with only one item (item 8) providing support for the hypothesis. Another item (item 5), which was included to check for the possible effect of confounding variables in the experimental situation, initiated results which were similar to those obtained for item 8. It seems therefore, that there may have been differences between items 3, 7 and 8, with regard to precisely which affective reactions they measured. In order to investigate the extent to which these items and item 5, measured the aspects of subjects' satisfaction, one-way analyses of variance across these items were performed for each of the eight experimental groups (controlling for personality, power position and sex).

The results of these analyses for female groups are shown in Table 11. Only one significant effect was obtained -- for internally controlled females in the low power position ($n=5$). The Duncan test indicated that this effect was due to a difference between item 7 and items 5 and 8.

The results of the analyses for male groups are shown in Table 12. It can be seen that items were a significant source of variance for three of the four experimental groups. Duncan tests indicated that for internally controlled males in the high power position, the significant differences were between item 7 and items 3, 5 and 8. For externally controlled males in the high power position, item 7 was significantly different from items 3 and 8. For externally controlled males in the low power position, item 7 was

significantly different from items 5 and 8. For all four male experimental groups, the greatest difference was between items 7 and 8.

These data suggest that items 7 and 8 tapped distinctly different aspects of satisfaction. The aspects of satisfaction measured by items 3 and 5 appear to have been quite similar to each other, and closer to that tapped by item 8 than item 7.

TABLE 11

ANALYSES OF VARIANCE ACROSS ITEMS 3, 5, 7 AND 8, FOR FEMALE GROUPS

Internal Females in the Low Power Position

Summary of the analysis of variance

Source of variation	df	MS	F	p
Items	3	6.53	3.84	<.05
Within Items	16	1.7		

Internal Females in the High Power Position

Summary of the analysis of variance

Source of variation	df	MS	F	p
Items	3	6.26	2.35	
Within Items	20	2.66		

External Females in the Low Power Position

Summary of the analysis of variance

Source of variation	df	MS	F	p
Items	3	3.57	1.32	
Within Items	24	2.69		

External Females in the High Power Position

Summary of the analysis of variance

Source of variation	df	MS	F	p
Items	3	5.62	2.07	
Within Items	24	2.71		

TABLE 12

ANALYSES OF VARIANCE ACROSS ITEMS
3, 5, 7, AND 8, FOR MALE GROUPS

Internal Males in the Low Power Position

Summary of the analysis of variance

Source of variation	df	MS	F	p
Items	3	1.17	0.69	
Within Items	24	1.69		

Internal Males in the High Power Position

Summary of the analysis of variance

Source of variation	df	MS	F	p
Items	3	3.33	3.62	<.05
Within Items	24	0.92		

External Males in the Low Power Position

Summary of the analysis of variance

Source of variation	df	MS	F	p
Items	3	4.99	3.61	<.05
Within Items	24	1.38		

External Males in the High Power Position

Summary of the analysis of variance

Source of variation	df	MS	F	p
Items	3	3.00	4.17	<.025
Within Items	20	0.72		

CHAPTER IV

DISCUSSION

The analyses of the data obtained for male subjects indicate some support for the first hypothesis, which postulated that subjects' satisfaction with their power position would be a function of the interaction between the personality variable of internal-external control and assigned power position. Males' responses to item 8 - "How much did you like the method of working that the leader chose for the group?" - were a function of the interaction between the personality variable of internal-external control and actual power position. The nature of this interaction followed the form predicted by the corollaries to the first hypothesis. These corollaries predicted that internals would be more satisfied in the high power than the low power position, and more satisfied than externals in the high power position. Externals on the other hand, would be more satisfied in the low power than the high power position, and more satisfied than internals in the low power position. All these effects are apparent in the responses made to item 8. Thus, in general terms, externally controlled males preferred the method of working associated with the low power position, while internally controlled males preferred the method of working associated with the high power position. A similar personality x power

position interaction appeared to mediate the responses of males to the question (number 5) - "How satisfied are you with your performance of your total job?" - though this item was included in order to check for the presence of confounding variables rather than as a specific test of the first hypothesis. The other two qustionnaire items (numbers 3 and 7) which were included for the purpose of testing this hypothesis, however did not show the same pattern of responses, and fail to provide support for this hypothesis.

In view of the discrepancy in results for the three items testing the first hypothesis, and the unexpected results obtained for item 5, analyses were performed to investigate whether these items had the same meaning for subjects. The results of these analyses indicated that these items were actually measuring different affective reactions. The major difference appears to have been between items 7 and 8, though items 3 and 5 seem to be closer in meaning to item 8 than to item 7. Therefore the results obtained for these items must be considered in the light of their somewhat different meanings for subjects.

Inspection of the phrasing of item 7 ("Would you have liked your job in the group more, or less, if you had been the leader?") suggests that this question may have aroused considerations relating to liking for the leadership position, as well as liking for the actual position occupied. Consistent with a leadership interpretation of the item content, sex differences were found, which reflected culturally

defined relations between sex roles and leadership. Thus, males reported to a significantly greater extent than females that they would have preferred the leader's job.

Of the three items (numbers 3, 5 and 8) which seemed to be most similar in meaning, only item 3 failed to provide support for the first hypothesis. Comparison of the wording of these items indicates that items 5 and 8 may have referred mainly to subjects' satisfaction with the operations they were performing, while item 3 tapped their satisfaction with their perceived degree of independence. In responding to this latter item therefore, subjects were required to furnish their own definition of the concept of "independence". As Table 3 shows, though three of the four differences shown by males for this item were in the predicted direction; contrary to prediction, externally controlled males showed greater liking for the amount of independence in the high power than in the low power position. Power position, regardless of personality, was a significant source of variance for responses to this item, due to the greater satisfaction of males with the amount of independence in the high power position. These findings suggest that for males, the possession of independence was an important enough consideration to override the potential effects of the personality variable of internal-external control. Thus, there seem to be grounds for concluding that responses to item 3 are not simply the results of satisfaction with the position occupied, and therefore this item cannot

be considered to provide a valid test of the first hypothesis.

The second hypothesis postulated that the personality variable of internal-external control would interact with power position in determining subjects' satisfaction with the group leader, who assigned them to their position. This hypothesis was similarly supported by the results for males, though not for females. Thus analysis of responses to the question - "In general, how satisfied were you with the leader?" - indicated a significant interaction between personality and power position. Corollaries regarding the form of this interaction were analogous to those for the first hypothesis, but were less strongly confirmed. However, the prediction that externals would be more satisfied than internals with the leader im the low power position was strongly supported. Support for another prediction that internals would be more satisfied with the leader in the high power as compared to the low power condition, approached significance.

Several factors may account for the sex differences generally found in the results. One possible explanation of these sex differences may lie in the nature of the task which subjects were given. The co-operative nature of this task received considerable emphasis, and therefore the task may have been inherently more satisfying for females than for males. If one takes into account the culturally mediated personality differences between the sexes (Shaw, 1971), females should be expected to value co-operation

more than males. Therefore, power position may have been a lesser determinant of satisfaction for females, than the nature of the task, a contingency which would have acted against any potential association of power position with satisfaction.

Subjects' responses to the question (number 10) - "how independent do you feel that you were in doing your job? - indicate that their interpretation of the term "independence" may also have involved cultural conceptions of sex roles. Thus, while males reported that they did feel more independent in the high power than in the low power position, females showed no difference in feelings of independence under these two conditions. This sex difference in the perception of the experimental situation may explain the failure of females to respond to questionnaire items in accord with the hypotheses advanced. As Reitan and Shaw (1964) have demonstrated, females in American culture (which presumably is very similar to Canadian culture) tend to play relatively more submissive, conforming roles, compared to males. Therefore, the amount of independence which females regard as desirable is likely to be lower than that for males. A related explanation for the hypothesis-related sex differences can be derived from Berkowitz's (1956) theoretical analysis of the interaction between personality and situational variables. He contended that personality variables are of greatest significance on initial entry into a situation, but that they become

progressively superseded by situational influences. Possibly, in this study, because of their greater tendency to submissiveness and conformity, females came under the influence of situational requirements more quickly than males, which therefore allowed less scope for the operation of personality variables.

Furthermore, in the interpretation of the sex differences found in this study, the possible operation of demand characteristics cannot be discounted. The wording of questionnaire items might have given subjects the impression that satisfaction was called for by the experiment. Because of their more pronounced tendencies toward conformity and submissiveness, made especially salient by the presence of a male experimenter, females may have adopted the role of "good" subjects to a greater extent than males, and reported untruthfully high levels of satisfaction in the low power position. This would have had the effect of masking any potential personality x power position interaction. In this respect, it is interesting to note that females reported significantly more ego-involvement in the experiment than did males, an effect which is consistent with a stronger desire on the part of females to appear to be "good" subjects.

The significantly greater satisfaction reported by external males as compared to internal males on items 4 and 8, might similarly be accounted for by the action of demand characteristics. This interpretation is part-

icularly convincing in view of the greater susceptibility to subtle influence of externals as compared to internals (Rotter, 1966).

The general findings of this study support those of Trow (1957) in showing that personality factors can affect subjects' satisfaction with their position in a communication network. Analyses indicated that need for autonomy, the personality variable employed by Trow, probably relates to a different set of characteristics than internal-external control, though there was a tendency for internals to report a higher need for autonomy than externals. These findings then, provide a further empirical demonstration of the importance of considering personality as well as situational factors in the analysis of behaviour.

Another important corollary that can be drawn from this study relates to the necessity of giving greater consideration to sex differences in empirical studies. Neither Trow, nor the majority of communication network studies have explicitly considered the possibility that findings may not be generalizable across sex. The present study shows clearly that sex differences can influence reactions to communication networks. Further research is required to delineate culturally learned sex roles and expectations, and to investigate how these affect behaviour in various settings. Certainly, data obtained in the present study suggest that such considerations mediate the reactions of individuals to situations involving power

relations.

Specifically, this study provides support for the hypothesized congruency between the expected locus of control and the preferred locus of control (Watson & Baumal, 1967), where preferrence refers to affective reactions to the surrounding situation and the activities which it necessitates. This relation is regarded as being of major import to the internal-external control construct, since it defines some of the motivational implications which are associated with predominant patterns of beliefs regardings the locus of control of outcomes. It is a relation also, which shows the relevance of internal-external control to a consideration of power relations.

The explicit use of the Personal Control factor in predicting behaviour in controlled laboratory conditions appears to represent a new departure in the literature. The relation of the Personal Control factor to behavioural criteria has as yet received little direct investigation. The only previous studies that have dealt with the behavioural correlates of personal control are those reported by Forward and Williams (1970), Gurin, Gurin, Lao and Beattie (1969), and Lao (1970). All of these studies however, used black American subjects, and utilized survey-type techniques. Forward and Williams found that Personal Control scores, but not Control Ideology or total I-E Scale scores, were related to subjects' evaluation of the Detroit riots. The closely related studies of Gurin et al.

and Lao, showed that the Personal Control factor, as distinct from the Control Ideology factor and the total I-E Scale score, was related to performance and motivational indicators of academic achievement. Lao (1970) in her discussion of these results noted that the results obtained for blacks using the Personal Control factor appeared to parallel findings in the literature for whites, using the total I-E Scale. She suggested that this was probably the results of a stronger relation between personal and ideological beliefs for whites than for blacks. Nevertheless she felt that "sharpening the internal-external control construct by making personal-ideological distinctions may enhance its predictive capacities for all populations " (Lao, 1970, p. 269). Lao's suggestion that there is a greater discrepancy between personal and ideological beliefs for blacks than whites has been supported by the subsequent factor analytic studies of Mirels (1970) and Minton (1971b). These studies showed that the Personal Control factor for whites tended to include items which had loaded on the Control Ideology factor for blacks. A factorial distinction which emerged in all of these studies was a personal-system distinction in beliefs relating to the locus of control of outcomes. A common inference which can be drawn from all these factor analytic studies then, is the importance of considering the factorial distinctions in the I-E Scale, in subsequent work.

The present study is seen as offering further evidence

of the validity of the personal control construct, by its demonstration of the ability of the Personal Control factor to predict behaviour under controlled laboratory conditions. Inspection of subjects' total I-E Scale scores showed that 33 per cent of the males (3/14 internals, and 6/13 externals) and 20 per cent of the females (5/11 internals, and 0/14 externals) who participated in this study, did not fall into the equivalent third of the distribution of full-scale scores. That is, 14/52 or 27 per cent of the subjects run in this study would not have been eligible for participation if subjects had been selected on the basis of their total I-E Scale scores, with the same criterion of selection. These data therefore tend to support Lao's (1970) contention, by indicating that a Personal Control factor probably is a more valid predictor of behavioural criteria related to personal beliefs in locus of control, than the total I-E Scale.

The findings of this study suggest several further implications which are of relevance to the study of organizational and societal power structures. They indicate that reactions to any particular pattern of authority cannot be safely generalized across individuals. Thus, for example, the comparison of the situational efficacy of autocratic and democratic styles of leadership is likely to have little validity, unless the relevant personality variables of participants are taken into account. It is of special import that an autocratic power structure is

preferred by some individuals (cf. Vroom, 1964), in spite of their relative powerlessness in this structure. Thus it seems that lack of power should not necessarily be assumed to possess negative connotations for all individuals - an assumption which is implicit in concepts like "alienation" and much of modern theorizing in connection with industrial and societal structures. The popularity of any particular leadership style or pattern of government then, is likely to depend to an important degree on the personality characteristics of those involved. Further research is necessary to define the relevant personality variables, and how they interact with situational and other variables. Once a sufficiently large fund of such empirical knowledge is available, it would appear that at least for relatively small groups, it would be feasible to predict which power structures would be most acceptable to members.

APPENDIX A

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief. Obviously there are no right or wrong answers.

Your answers to the items on this inventory are to be recorded on the separate answer sheet which has been passed out. FILL OUT THIS ANSWER SHEET NOW. Print your identification number on the answer sheet, then finish reading these directions. Do not open the booklet until you are told to do so.

Please answer these items carefully but do not spend too much time on any one item. Be sure to find an answer for every choice. Find the number of the item on the answer sheet and blacken the space under the letter which corresponds to the statement you choose as most true.

In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you're concerned. Also try to respond to each item independently when making your choice; do not be influenced by your previous choices.

REMEMBER

Select that alternative which you personally believe to be more true.

I more strongly believe that:

1. a. Children get into trouble because their parents punish them too much.

   b. The trouble with most children nowadays is that their parents are too easy with them.

2. a. Many of the unhappy things in people's lives are partly due to bad luck.

   b. People's misfortunes result from the mistakes they make.

3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.

   b. There will always be wars, no matter how hard people try to prevent them.

4. a. In the long run people get the respect they deserve in this world.

   b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. a. The idea that teachers are unfair to students is nonsense.

   b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6. a. Without the right breaks one cannot be an effective leader.

   b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. a. No matter how hard you try some people just don't like you.

   b. People who can't get others to like them, don't understand how to get along with others.

8. a. Heredity plays the major role in determining one's personality.

   b. It is one's experiences in life which determine what they're like.

9. a. I have often found that what is going to happen will happen.

   b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

I more strongly believe that:

10. a. In the case of the well-prepared student there is rarely if ever such a thing as an unfair test.

b. Many times exam questions tend to be so unrelated to course work, that studying is really useless.

11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.

b. Getting a good job depends mainly on being in the right place at the right time.

12. a. The average citizen can have an influence in government decisions.

b. This world is run by the few people in power, and there is not much the little guy can do about it.

13. a. When I make plans, I am almost certain that I can make them work.

b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14. a. There are certain people who are just no good.

b. There is some good in everybody.

15. a. In my case getting what I want has little or nothing to do with luck.

b. Many times we might just as well decide what to do by flipping a coin.

16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.

b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.

b. By taking an active part in political and social affairs the people can control world events.

18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.

b. There really is no such thing as "luck".

19. a. One should always be willing to admit his mistakes.

b. It is usually best to cover up one's mistakes.

I more strongly believe that:

20. a. It is hard to know whether or not a person really likes you.

    b. How many friends you have depends upon how nice a person you are.

21. a. In the long run the bad things that happen to us are balanced by the good ones.

    b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22. a. With enough effort we can wipe out political corruption.

    b. It is difficult for people to have much control over the things politicians do in office.

23. a. Sometimes I can't understand how teachers arrive at the grades they give.

    b. There is a direct connection between how hard I study and the grades I get.

24. a. A good leader expects people to decide for themselves what they should do.

    b. A good leader makes it clear to everybody what their jobs are.

25. a. Many times I feel that I have little influence over the things that happen to me.

    b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. a. People are lonely because they don't try to be friendly.

    b. There's not much use in trying too hard to please people, if they like you, they like you.

27. a. There is too much emphasis on athletics in high school.

    b. Team sports are an excellent way to build character.

28. a. What happens to me is my own doing.

    b. Sometimes I feel that I don't have enough control over the direction my life is taking.

29. a. Most of the time I can't understand why politicians behave the way they do.

    b. In the long run the people are responsible for bad government on a national as well as on a local level.

APPENDIX B

The Nine Items Used to Measure Personal Control

2. a. Many of the unhappy things in people's lives are partly due to bad luck.

   b. People's misfortunes result from the mistakes they make.

5. a. The idea that teachers are unfair to students is nonsense.

   b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.

   b. Getting a good job depends mainly on being in the right place at the right time.

15 a. In my case getting what I want has little or nothing to do with luck.

   b. Many times we might just as well decide what to do by flipping a coin.

16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.

   b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.

   b. There really is no such thing as "luck".

23. a. Sometimes I can't understand how teachers arrive at the grades they give.

    b. There is a direct connection between how hard I study and the grades I get.

25. a. Many times I feel that I have little influence over the things that happen to me.

    b. It is impossible for me to believe that chance or luck plays an important role in my life.

28. a. What happens to me is my own doing.

    b. Sometimes I feel that I don't have enough control over the direction my life is taking.

Scoring Key

The following responses are scored in the direction of external control:

2a
5b
11b
15b
16a
18a
23a
25a
28b

APPENDIX C

UNIVERSITY OF WINDSOR

WINDSOR 11, ONTARIO

TELEPHONE: AREA CODE 519
253-4232

DEPARTMENT OF PSYCHOLOGY

March 11, 1971

Dear

We are trying to obtain a sample of students at the University of Windsor as participants in a study on group processes. We have obtained your name from the list of introductory psychology students and are writing to request your cooperation in some research that is presently in progress in this area.

This research is concerned with the communication of people in groups who are working at simple tasks. It is hoped that the findings will make some contribution toward improving relations in organizations.

We would be very grateful if you would be able to participate in this research. About one hour of your time would be required.

You will be contacted by telephone within the next few weeks to determine if you are interested in participating. More details about the study will be given at that time.

Yours truly,

Henry L. Minton

Henry L. Minton, Ph.D.
Associate Professor

HLM:maa

APPENDIX D

Experimental Task and Programmed Messages

All subjects received the same list of tasks, as follows:

W

List of Objects to be Cut Out

Heart 3
Hand 17
Yacht 15
Elephant 9
Dog 4
Arrow 11
Scissors 2
Airplane 21

High Power Condition

Soons after they sat down at their desks, subjects received the following message:

To W.
22, 13
From Y.

After the subject sent his first set of notes, and before he had completed cutting out the second object on his list (hand), he received the following message:

To W.
I have the Key. I am sending a copy of it to both you and Y so you can use it for yourselves.
Here it is:
Airplane 14, 21
Arrow 11
Bottle 19
Dog 4
Elephant 9, 13
Fork 5

Giraffe 7, 25
Hand 17 20
Heart 3
Horse 12
Monkey 6
Scissors 1, 2
Spoon 8, 22
Tree 18, 23
Yacht 15

My first 2 tasks are Monkey and Fork.

From X

While the subject was in the process of cutting out the third object on his list (Yacht), he received the following message:

To W.

7, 1

From Y

This was followed shortly after by the following message:

To W.

My next 2 tasks are horse and tree.

From X

When the subject began to cut out the final object on his list (Airplane), he received the final message:

To W.

My last 2 tasks are sword and bottle.

From X

Low Power Condition

Soon after they sat down at their desks, subjects received the following message:

To W.

22, 13

From Y

After the subject sent his first set of notes and began to cut out the first object on his list (Heart), he received this message:

To W.

I have the key. Send your messages only to me and I will tell you which objects to cross off your list. Y will do the same.
Go ahead with both of your first 2 objects.
From X

When the subject sent a note to X, indicating that "yacht" and "elephant" were the next two objects on his list, he received this reply:

To W.

Cut out yacht. Cross elephant off your list.
From X

In reply to the subject's note to X that "dog" and "arrow" were the next two tasks on his list, came the following message:

To W.

Cut out both of those objects.
From X

After the subject sent his final note to X, indicating that "scissors" and "airplane" were his next two tasks, he received the following reply:

To W.

Cross scissors off your list. Cut out airplane.
From X

It can be seen, that in neither condition were subjects required to cut out "elephant", or "scissors", and therefore it was necessary for them to cut out only six of the eight objects on their list.

APPENDIX E

POST-EXPERIMENTAL QUESTIONNAIRE

Please fill out the following questionnaire by checking the scale-mark above the statement which most accurately describes your reaction to each question. Be sure to place your check marks exactly on the scale-marks, not between scale-marks.

1. How much did you like cutting out the outlines?

LIKED VERY MUCH	LIKED MODERATELY	LIKED SLIGHTLY	NEITHER LIKED NOR DISLIKED	DISLIKED SLIGHTLY	DISLIKED MODERATELY	DISLIKED VERY MUCH

2. How much interest did you have in the experiment as a whole?

VERY GREAT INTEREST	MODERATE INTEREST	SLIGHT INTEREST	NEITHER INTEREST NOR DISINTEREST	SLIGHT DISINTEREST	MODERATE DISINTEREST	VERY GREAT DISINTEREST

3. In performing your job, how satisfied were you with the amount of independence that the leader gave you?

VERY SATISFIED	MODERATELY SATISFIED	SLIGHTLY SATISFIED	NEITHER SATISFIED NOR DISSATISFIED	SLIGHTLY DISSATISFIED	MODERATELY DISSATISFIED	VERY DISSATISFIED

4. In general, how satisfied were you with the leader?

VERY SATISFIED	MODERATELY SATISFIED	SLIGHTLY SATISFIED	NEITHER SATISFIED NOR DISSATISFIED	SLIGHTLY DISSATISFIED	MODERATELY DISSATISFIED	VERY DISSATISFIED

5. How satisfied are you with your performance of your total job?

VERY SATISFIED	MODERATELY SATISFIED	SLIGHTLY SATISFIED	NEITHER SATISFIED NOR DISSATISFIED	SLIGHTLY DISSATISFIED	MODERATELY DISSATISFIED	VERY DISSATISFIED

6. How important was it to you personally, to do your job in the group efficiently?

VERY IMPORTANT	MODERATELY IMPORTANT	SLIGHTLY IMPORTANT	NEITHER IMPORTANT NOR UNIMPORTANT	SLIGHTLY UNIMPORTANT	MODERATELY UNIMPORTANT	VERY UNIMPORTANT

7. Would you have liked your job in the group more, or less, if you had been the leader?

VERY MUCH MORE	MODERATELY MORE	SLIGHTLY MORE	NEITHER MORE NOR LESS	SLIGHTLY LESS	MODERATELY LESS	VERY MUCH LESS

8. How much did you like the method of working that the leader chose for the group?

LIKED VERY MUCH	LIKED MODERATELY	LIKED SLIGHTLY	NEITHER LIKED NOR DISLIKED	DISLIKED SLIGHTLY	DISLIKED MODERATELY	DISLIKED VERY MUCH

9. How efficient do you think that this method of working was?

VERY EFFICIENT	MODERATELY EFFICIENT	SLIGHTLY EFFICIENT	NEITHER EFFICIENT NOR INEFFICIENT	SLIGHTLY INEFFICIENT	MODERATELY INEFFICIENT	VERY INEFFICIENT

10. How independent do you feel that you were in doing your job?

VERY INDEPENDENT	MODERATELY INDEPENDENT	SLIGHTLY INDEPENDENT	NEITHER INDEPENDENT NOR DEPENDENT	SLIGHTLY DEPENDENT	MODERATELY DEPENDENT	VERY DEPENDENT

11. How important is it to you to carry out the business of life in an independent and self-reliant fashion?

VERY IMPORTANT	MODERATELY IMPORTANT	SLIGHTLY IMPORTANT	NEITHER IMPORTANT NOR UNIMPORTANT	SLIGHTLY UNIMPORTANT	MODERATELY UNIMPORTANT	VERY UNIMPORTANT

Please write out your answers to the remaining questions in the spaces provided.

12. What were your honest impressions of the experiment?

13. Are there any comments you would like to make about the other group members?

14. Are there any other aspects of the experiment on which you would like to comment?

APPENDIX F

ANALYSES OF VARIANCE OF RESPONSES TO ITEMS 1, 2, 5, 6 and 9.

Liking for the Experimental Task (Item 1)

Summary of the analysis of variance for all subjects

Source of variation	df	MS	F	p
Personality (A)	1	1.02	0.56	
Power Position (B)	1	3.01	1.64	
Sex (C)	1	5.24	2.86	<.10
A X B	1	0.23	0.12	
A X C	1	6.89	3.76	<.10
B X C	1	0.53	0.29	
A X B X C	1	0.91	0.50	
Residual	44	1.83		

Summary of the analysis of variance for females

Source of variation	df	MS	F	p
Personality	1	1.27	0.64	
Power Position	1	0.43	0.22	
Personality x Power Pos.	1	1.01	0.51	
Residual	21	1.98		

Summary of the analysis of variance for males

Source of variation	df	MS	F	p
Personality	1	6.92	4.07	<.10
Power Position	1	3.34	1.96	
Personality x Power Pos.	1	0.11	0.06	
Residual	23	1.70		

Interest in the Experiment (Item 2)

Summary of the analysis of variance for all subjects

Source of variation	df	MS	F	p
Personality (A)	1	0.15	0.27	
Power Position (B)	1	0.97	1.76	
Sex (C)	1	0.15	0.27	
A X B	1	1.44	2.62	
A X C	1	0.18	0.33	
B X C	1	0.02	0.04	
A X B X C	1	0.97	1.76	
Residual	44	0.55		

Summary of the analysis of variance for females

Source of variation	df	MS	F	p
Personality	1	0.01	0.02	
Power Position	1	0.61	1.07	
Personality x Power Pos.	1	2.28	4.00	$<.10$
Residual	21	0.57		

Summary of the analysis of variance for males

Source of variation	df	MS	F	p
Personality	1	0.35	0.66	
Power Position	1	0.35	0.66	
Personality x Power Pos.	1	0.02	0.04	
Residual	23	0.53		

Satisfaction with Performance (Item 5)

Summary of the analysis of variance for all subjects

Source of variation	df	MS	F	p
Personality (A)	1	0.04	0.03	
Power Position (B)	1	4.01	3.49	<.10
Sex (C)	1	1.11	0.96	
A X B	1	1.53	1.33	
A X C	1	0.05	0.04	
B X C	1	2.48	2.16	
A X B X C	1	1.52	1.32	
Residual	44	1.15		

Summary of the analysis of variance for females

Source of variation	df	MS	F	p
Personality	1	0.00	0.00	
Power Position	1	6.13	3.58	<.10
Personality x Power Pos.	1	0.00	0.00	
Residual	21	1.71		

Summary of the analysis of variance for males

Source of variation	df	MS	F	p
Personality	1	0.10	0.16	
Power Position	1	0.10	0.16	
Personality x Power Pos.	1	3.20	5.00	<.05
Residual	21	0.64		

Ego-Involvement with the Job (Item 6)

Summary of the analysis of variance for all subjects

Source of variation	df	MS	F	p
Personality (A)	1	1.50	3.12	
Power Position (B)	1	0.04	0.08	
Sex (C)	1	2.18	4.54	<.05
A X B	1	0.32	0.67	
A X C	1	0.69	1.44	
B X C	1	0.10	0.21	
A X B X C	1	0.00	0.00	
Residual	44	0.48		

Summary of the analysis of variance for females

Source of variation	df	MS	F	p
Personality	1	0.07	0.50	
Power Position	1	0.01	0.07	
Personality x Power Position	1	0.18	1.28	
Residual	21	0.14		

Summary of the analysis of variance for males

Source of variation	df	MS	F	p
Personality	1	2.22	2.77	
Power Position	1	0.14	0.17	
Personality x Power Pos.	1	0.14	0.17	
Residual	23	0.80		

Ratings of Efficiency of Work Method (Item 9)

Summary of the analysis of variance for all subjects

Source of variation	df	MS	F	p
Personality (A)	1	0.93	0.47	
Power Position (B)	1	2.00	1.01	
Sex (C)	1	3.07	1.56	
A X B	1	0.31	0.16	
A X C	1	0.00	0.00	
B X C	1	0.09	0.04	
A X B X C	1	10.25	5.20	<.05
Residual	44	10.97		

Summary of the analysis of variance for females

Source of variation	df	MS	F	p
Personality	1	0.49	0.19	
Power Position	1	1.41	0.55	
Personality x Power Pos.	1	6.74	2.63	
Residual	21	2.56		

Summary of the analysis of variance for males

Source of variation	df	MS	F	p
Personality	1	0.45	0.31	
Power Position	1	0.64	0.44	
Personality x Power Position	1	3.68	2.55	
Residual	23	1.44		

APPENDIX G

Questionnaire Responses of Individual Subjects

Item 1.

Internals

Low Power		High Power	
Males	Females	Males	Females
1	3	4	2
5	2	1	1
2	7	2	3
2	2	3	3
1	1	3	1
6		3	1
3		1	

Externals

Low Power		High Power	
Males	Females	Males	Females
4	2	3	4
5	2	4	3
4	1	3	2
4	3	3	1
5	4	4	2
4	2	2	2
2	1		2

Item 2.

Internals

Low Power		High Power	
Males	Females	Males	Females
1	2	4	2
2	2	2	2
1	1	1	1
2	1	2	5
2	1	2	2
2		2	2
2		1	

Externals

Low Power			
Males	Females	Males	Females
2	2	3	3
2	1	3	2
2	3	2	2
1	2	1	1
2	2	2	2
3	2	2	1
2	2		1

Item 3.

Internals

Low Power		High Power	
Males	Females	Males	Females
3	2	1	1
1	2	1	1
3	5	2	2
6	3	1	5
2	1	2	1
5		3	1
3		2	

Externals

Low Power		High Power	
Males	Females	Males	Females
4	5	1	2
2	2	2	1
1	4	2	4
4	1	1	4
1	4	2	2
1	2	3	2
3	1		1

Item 4.

Internals

Low Power		High Power	
Males	Females	Males	Females
2	2	1	1
2	1	2	3
2	1	1	2
2	1	2	4
2	1	3	1
3		1	2
3		2	

Externals

Low Power		High Power	
Males	Females	Males	Females
1	6	1	1
2	1	2	1
1	2	2	1
1	1	1	1
1	1	2	2
1	1	2	2
1	1		1

Item 5.

Internals

Low Power		High Power	
Males	Females	Males	Females
2	2	1	4
3	2	2	1
2	2	3	5
2	3	1	3
2	1	3	3
4		2	2
2		1	

Externals

Low Power		High Power	
Males	Females	Males	Females
3	2	2	3
2	1	3	2
2	2	3	2
1	4	2	1
2	1	4	5
1	2	2	6
2	1		2

Item 6.

Internals

Low Power		High Power	
Males	Females	Males	Females
1	2	1	1
2	1	2	1
1	1	1	1
1	1	1	1
1	1	2	1
1		1	1
2		1	

Externals

Low Power		High Power	
Males	Females	Males	Females
2	1	1	1
1	1	1	2
1	2	3	2
1	1	1	1
1	1	4	1
2	1	2	1
4	1		1

Item 7.

Internals

Low Power		High Power	
Males	Females	Males	Females
1	5	4	4
3	3	2	5
2	4	2	2
5	2	1	7
1	7	4	4
1		4	4
4		4	

Externals

Low Power		High Power	
Males	Females	Males	Females
5	2	2	7
5	5	3	6
2	4	3	4
1	1	4	4
3	4	2	4
5	5	5	4
2	4		4

Item 8.

Internals

Low Power		High Power	
Males	Females	Males	Females
2	2	1	1
2	1	3	4
2	2	1	3
2	1	1	6
4	2	2	2
3		1	2
3		1	

Externals

Low Power		High Power	
Males	Females	Males	Females
1	6	1	1
2	2	2	2
1	5	2	1
2	1	1	2
1	1	2	5
1	1	2	2
1	1		1

Item 9.

Internals

Low Power		High Power	
Males	Females	Males	Females
2	2	1	2
3	1	5	6
1	1	1	3
5	1	1	5
1	4	2	2
2		1	2
2		2	

Externals

Low Power		High Power	
Males	Females	Males	Females
1	6	1	2
2	1	3	2
1	5	1	2
1	1	2	1
2	2	4	4
1	2	3	2
1	1		1

Item 10.

Internals

Low Power		High Power	
Males	Females	Males	Females
3	2	2	2
3	3	2	7
6	5	2	1
5	2	1	2
2	1	2	1
6		3	2
6		2	

Externals

Low Power		High Power	
Males	Females	Males	Females
7	2	1	4
2	4	3	2
2	3	3	5
7	3	4	7
6	5	1	2
3	3	2	1
5	1		3

Item 11.

Internals

Low Power		High Power	
Males	Females	Males	Females
1	2	2	1
2	2	1	3
2	1	1	1
1	1	2	1
2	2	2	1
1		2	1
1		1	

Externals

Low Power		High Power	
Males	Females	Males	Females
2	1	1	2
1	2	2	2
2	1	6	2
1	1	1	1
3	3	2	2
1	2	2	2
2	1		2

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VITA AUCTORIS

1946	- Born in Kiel, W. Germany, to Dmytro and Maria Hrycenko.
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1968	- Received Bachelor of Science Degree (Honours Psychology) from the University of London, England.
1969	- Received the Diploma in Applied Psychology from the University of Liverpool, England.
1970	- Registered as a full-time graduate student at the University of Windsor.